Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

U.S. DEPARTMENT OF AGRICULTURE • LIBRARY

BELTSVILLE BRANCH

U.S. DEPARTMENT OF AGRICULTURE • LIBRARY •

C78

VOL. 11 No. 1 JANUARY 6, 1961

LIBRARY
RECEIVED
JAN 10 1961
U. S. DEPARTMENT OF AGRICULTURE
BELTSVILLE BRANCH

Cooperative ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

Reports and inquiries pertaining to this release should be mailed to:

Survey and Detection Operations
Plant Pest Control Division
Agricultural Research Service
United States Department of Agriculture
Washington 25, D. C.

84007

Volume 11 January 6, 1961 Number 1

COOPERATIVE ECONOMIC INSECT REPORT

Highlights of Insect Conditions

Status of EUROPEAN CORN BORER in New Jersey in 1960. (p. 3).

BOLL WEEVIL hibernation surveys in South and North Carolina, Fall 1960. (pp. 4-5). Summary map of hibernation surveys in Louisiana, Mississippi, Tennessee, North Carolina and South Carolina. (p. 5).

1960 fall survey of stored-grain bins in Nebraska. (p. 7).

HAWAIIAN insect notes. (p. 8).

List of COOPERATIVE SURVEY ENTOMOLOGISTS. (p. 9).

List of STATE CLEARING OFFICES for economic insect survey reports. (pp. 10-12).

INSECT DETECTION: A tick (*Ixodes pacificus*) recorded for first time in Hawaii (p. 8) and *olive scale* recorded for first time in Solano County, California (p. 5).

****

Reports in this issue are for week ending December 30, unless otherwise indicated.

WEATHER BUREAU 30-DAY OUTLOOK

JANUARY 1961

The Weather Bureau's 30-day outlook for January calls for temperatures to average below seasonal normals over the eastern half of the Nation, with greatest departures over the Great Lakes Region, Ohio Valley, and Middle Atlantic States. In the western half of the country near normal temperatures are in prospect except for below normal in the Southern Plains. Precipitation is predicted to exceed normal over the Southwest and along the Atlantic Coast. Subnormal amounts are indicated for the Far West, the Great Lakes Region, and the mid-West. Otherwise near normal amounts are in prospect.

Weather forecast given here is based on the official 30-day "Resume and Outlook," published twice a month by the Weather Bureau. You can subscribe through Superintendent of Documents, Washington 25, D. C. Price $4.80 a year, $2.40 a half year.

WEATHER OF THE WEEK ENDING JANUARY 2

With typical winter weather prevailing across the Nation, average temperatures for the week varied from a few degrees above to a few degrees below normal. This week, however, was 3° to 6° colder than the previous week in the Far West and generally 5° to 10° warmer in the central and eastern portions of the Nation. Freezing was rather widespread in the Far West during the latter half of the period, occurring in the San Joaquin Valley of California on the last 4 mornings, at San Francisco on January 2, and at Phoenix, Arizona, on January 1 and 2. East of the Rocky Mountains, subzero readings in extreme northern areas were rather general during the first half of the period and in the northern Great Plains and upper Mississippi Valley again at the end. Detroit Lakes, Minnesota, reported -35° on the 27th. The ground is frozen about 2 feet deep in Iowa and Wisconsin. Freezing extended to Tallahassee, Florida, on December 25 and to Mobile, Alabama, on January 2, but during the remainder of the week temperatures remained above freezing from eastern Texas to the Atlantic coast.

Frequent, widespread precipitation east of the Rockies, in the form of sleet and snow in middle and northern areas and rain in the South, was moderate to heavy from eastern Texas northeastward to New England and very light elsewhere. The heavy precipitation fell during the passage of the week's only major storm which developed in the northwestern Gulf of Mexico on December 31 and moved northeastward, reaching Nova Scotia on January 2. The storm produced 3 to 4 inches of rain along the Texas coast and about 2 inches along the path of the storm's center. Snowfall in a belt extending from Little Rock, Arkansas, to New England ranged from 1 inch at Little Rock up to 17 inches in northern New England. Precipitation in the Far West was generally very light, with most stations in California and Nevada reporting only traces or none at all. Snow now covers the Ohio Valley and Northeast with depths ranging from 2 to 5 inches in southern Indiana and northern Kentucky to 20 inches or more in some areas of Pennsylvania, New York State, and New England. In central areas the cover extends southward to central Illinois, northern Missouri, Nebraska, northwestern Kansas, and eastern Colorado. In the Far West, the cover is limited to higher elevations, except in Idaho and eastern Washington where depths in the valleys range from 1 to as much as 8 inches. (Summary supplied by U. S. Weather Bureau).

CEREAL AND FORAGE INSECTS

Status of European Corn Borer in New Jersey in 1960

Cooperating agricultural agencies in New Jersey reported on surveys conducted in 11 counties in the State to determine the abundance of the European corn borer (Pyrausta nubilalis (Hubner)) in 1960. Survey data and records of field observations were submitted to Survey and Detection Operations, Plant Pest Control Division, Agricultural Research Service, USDA, in Washington, D.C., for processing and inclusion in the Cooperative Economic Insect Report.

The survey in 1960 was conducted on a county basis. A total of 98 stops were made in the 11 counties; 10 stops each in 8 counties, 8 stops in 1 county and 5 stops each in 2 counties. The State average was 183 borers per 100 plants compared with 270 in 1959 based on comparable counties surveyed. Slight increases in population were recorded in Cumberland, Salem and Warren Counties, but decreases were recorded in the other 8 counties.

European Corn Borer Abundance in Corn,
Fall of 1960, Compared with Data for 1959

Counties	Average Number of Borers per 100 plants 1959	 1960
Burlington	256	232
Camden 1/	372	318
Cumberland 2/	155	188
Gloucester	344	264
Hunterdon	164	128
Mercer	722	176
Middlesex 1/	568	146
Monmouth	333	150
Salem	95	190
Somerset	175	128
Sussex	9	-
Warren	57	90
State mean	271	183
State mean comparable counties (11)	270	183

1/ Five stops made in county.
2/ Eight stops made in county.

WINTER GRAIN MITE (Penthaleus major) - OKLAHOMA - Counts up to 50 per linear foot of row reported week ending December 22 in southwestern and west central counties. Localized infestations noted in Kingfisher County, west central area, week ending December 31. (Okla. Coop. Sur.).

GREENBUG (Toxoptera graminum) - OKLAHOMA - Remains present in most small grain fields throughout State. Almost no economic infestations reported. (Okla. Coop. Sur.).

CORN LEAF APHID (Rhopalosiphum maidis) - ARIZONA - Infestations continue light to medium in central and southwest area barley. (Ariz. Coop. Sur.).

PEA APHID (Macrosiphum pisi) - ARIZONA - Very light infestations present in alfalfa and in papago peas in central area. (Ariz. Coop. Sur.).

SPOTTED ALFALFA APHID (Therioaphis maculata) - OKLAHOMA - Some damage to newly planted alfalfa reported in Cleveland and McClain Counties. (Okla. Coop. Sur.).

FRUIT INSECTS

OLIVE SCALE (Parlatoria oleae) - CALIFORNIA - Medium infestation on olive in Dixon, Solano County; a new county record. (Cal. Coop. Rpt.).

SAN JOSE SCALE (Aspidiotus perniciosus) - OKLAHOMA - Heavy on peach trees in several small orchards in Choctaw County. (Okla. Coop. Sur.).

PEACH TREE BORER (Sanninoidea exitiosa) - ALABAMA - Moderate infestation on peach and plum trees in Chambers County. (Barwood).

TRUCK CROP INSECTS

CABBAGE APHID (Brevicoryne brassicae) - ARIZONA - Heavy infestations present in some Maricopa County cabbage. (Ariz. Coop. Sur.).

A LEAFHOPPER (Empoasca sp.) - ARIZONA - Medium populations present in Maricopa County lettuce. (Ariz. Coop. Sur.).

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - CALIFORNIA - Reported from Chinese cabbage near San Jose, Santa Clara County. This weevil was considered important 30 years ago in California, but is rarely mentioned in current reports. This heavy infestation appears to be unusual. (Cal. Coop. Rpt.).

COTTON INSECTS

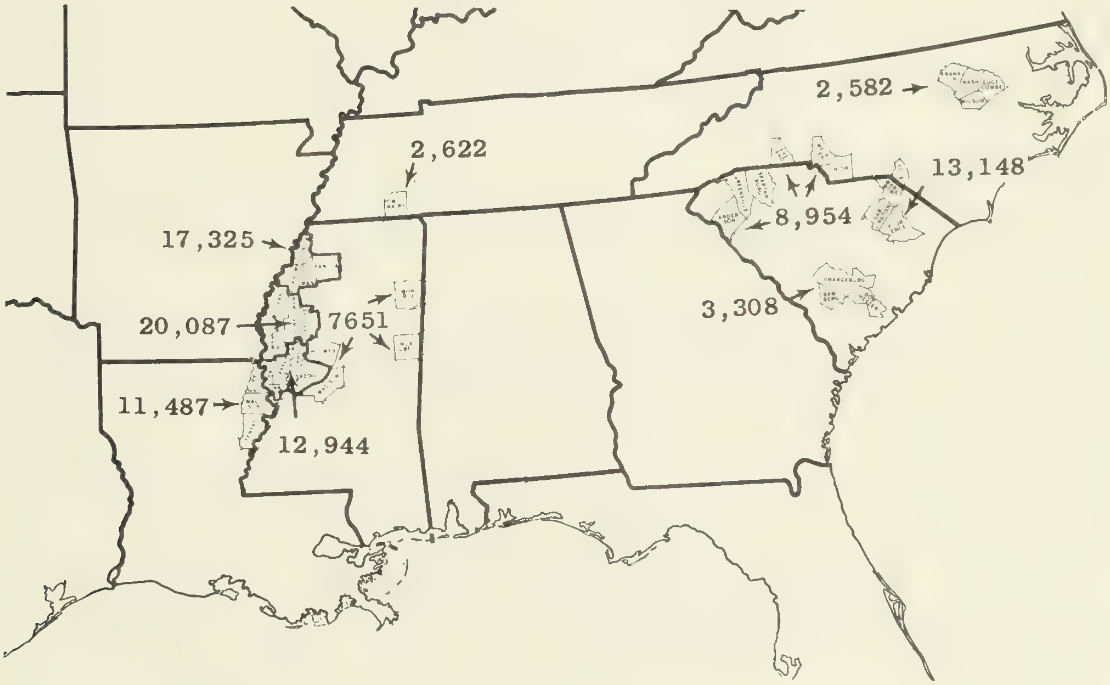
BOLL WEEVIL HIBERNATION SURVEYS IN SOUTH AND NORTH CAROLINA - FALL 1960

Collections of surface trash samples (two square yards per sample) have been completed in four areas of the Carolinas during the period November 15 to December 5, 1960, by cooperating State and Federal agencies to determine the number of boll weevil (Anthonomus grandis) adults that went into hibernation during the period. The same four areas were sampled as in the fall of 1956, 1957, 1958 and 1959. In each area, a total of 30 locations (farm sites) was sampled with 3 samples being taken at each location. The number of counties per area from which samples were taken varied from 3-6. Average counts (live weevils per acre) this past fall exceeded those of the 1959 survey in each area. The counts indicate only a potential, however, the degree of infestation in 1961 will depend largely on weather and other factors that will affect the weevils during the winter, spring and summer of 1961. In addition, spring surveys are normally conducted in the same locations where fall surveys were conducted to determine the percentage of weevils that survive the winter. The fall surveys in Louisiana, Mississippi and Tennessee were reported in CEIR 10(50):1125. The average per acre counts of live weevils in North and South Carolina, by areas, in 1960 and a summary map, showing average counts in all areas surveyed in 1960, are both shown on page 5.

Area (County and State)	Number of Weevils Per Acre	
	1959	1960
South Central South Carolina (Orangeburg, Bamberg, Dorchester Counties).	1,318	3,308
Coastal Plain of South and North Carolina (Florence, Darlington and Marlboro Counties, S.C.; Scotland County, N.C.).	5,082	13,148
Piedmont of South and North Carolina (Anderson, Greenville and Spartanburg Counties, S.C.; Mecklenburg, Cleveland and Union Counties, N.C.).	4,383	8,954
North Central North Carolina (Nash, Wilson, Franklin and Edgecombe Counties).	834	2,582

In Florence County, South Carolina, fall examinations have been made each year since 1942, with the exception of the fall of 1946. In this county, the average number of weevils per acre (10,814) was 1.97 times the average found for the 18 years that such examinations have been made. Only in 1955 have more weevils been found in fall examinations in Florence County. (Hopkins, Taft; PPC).

BOLL WEEVIL HIBERNATION SURVEYS - FALL 1960



FOREST, ORNAMENTAL AND SHADE TREE INSECTS

SILVER-SPOTTED TIGER MOTH (*Halisidota argentata*) - WASHINGTON - Larvae damaging Douglas-fir near Olympia. (McKay).

AN APHID - OKLAHOMA - Moderate populations of an unidentified species on arborvitae in south central area. (Okla. Coop. Sur., Dec. 22).

COTTONY-CUSHION SCALE (*Icerya purchasi*) - ALABAMA - Moderate infestation on privet hedge, locally, in Montgomery County. (Seibels).

INSECTS AFFECTING MAN AND ANIMALS

COMMON CATTLE GRUB (*Hypoderma lineatum*) - OKLAHOMA - Larval populations in backs of cattle at highest level of season. Maximum numbers reported averaged 62 per animal in a group of 16 steers in Woods County. Average of all grub counts reported in State in yearling steers was 19 per animal. (Okla. Coop. Sur.).

FACE FLY (*Musca autumnalis*) - VIRGINIA - Very common in association with *Pollenia rudis* and species of blow flies in and around a three-story home in Pulaski, Pulaski County. (Rowell, Turner; Dec. 12).

HOG LOUSE (*Haematopinus suis*) - OKLAHOMA - Small numbers present in most unsprayed hogs throughout State. (Okla. Coop. Sur.; Dec. 22).

CATTLE LICE - UTAH - Beef and dairy cattle rubbing because of infestation in numerous Cache County herds. (Knowlton). OKLAHOMA - Widespread in State. Controls needed in many areas. (Okla. Coop. Sur.).

WINTER TICK (*Dermacentor albipictus*) - OKLAHOMA - Common throughout eastern portion of State. (Okla. Coop. Sur.).

MISCELLANEOUS INSECTS

RING-LEGGED EARWIG (*Euborellia annulipes*) - OKLAHOMA - Present in annoying numbers in 2 restaurants in Comanche County and a home in Johnston County. (Okla. Coop. Sur.).

AN EARWIG - ARIZONA - An undetermined species a problem around homes in Phoenix area of Maricopa County. Species occurred throughout summer and fall, staying in grass near base of house during day and coming out at night or when disturbed. They also enter homes at night when an entrance place is available. Damage to plants not observed. (Ariz. Coop. Sur.).

POWDER POST BEETLES - OKLAHOMA - Emerging from flooring in several newly built homes in Payne County. Approximately 7 percent of boards in floor show exit holes. (Okla. Coop. Sur., Dec. 22).

A PIT-MAKING SCALE (*Asterolecanium arabidis*) - CALIFORNIA - A heavy infestation on sonoma sage, *Salvia sonomensis*, in Sonoma County reported; apparently a first record for this host. (Cal. Coop. Rpt.).

STORED-PRODUCT INSECTS

AMERICAN PLUM BORER (*Euzophera semifuneralis*) - OKLAHOMA - Mature larvae infesting approximately 25 percent of sweetpotatoes in 3 storage bins in south central area. Some larvae engraving wooden containers holding sweetpotatoes. (Okla. Coop. Sur.).

1960 FALL SURVEY OF STORED-GRAIN BINS IN NEBRASKA

	CORN 168 Bins		SORGHUM 635 Bins		WHEAT 244 Bins		RYE 9 Bins		BARLEY 3 Bins	
	% with Live	Insects Dead	% with Live	Insects Dead	% with Live	Insects Dead	% with Live	Insects Dead	% with Live	Insects Dead
Rice weevil *Sitophilus* *oryzae*	0.5	0	0	0	0	1.2	0	0	0	0
Granary weevil *Sitophilus* *granarius*	1.2	2.9	1.6	4.6	1.6	6.5	0	11.0	66.3	0
A dermestid *Trogoderma* *glabrum*	1.7	5.3	0.4	1.9	3.3	3.3	0	0	0	0
Saw-toothed grain beetle *Oryzaephilus* *surinamensis*	4.1	10.0	7.7	4.3	5.3	11.5	0	11.0	33.3	0
Flat grain beetle *Laemophloeus* *pusillus*	2.9	6.5	18.7	1.4	7.7	6.5	22.0	0	0	0
Cadelle *Tenebroides* *mauritanicus*	1.7	4.1	0	0.1	0	0.8	11.0	0	0	0
Indian-meal moth *Plodia* *interpunctella*	1.2	0	0.3	1.0	0.8	1.6	0	0	0	0
Lesser grain borer *Rhyzopertha* *dominica*	0	0	0	0	1.2	0	0	0	0	0
Yellow mealworm *Tenebrio* *molitor*	1.2	0	0	0	0	0	0	0	0	0
Flour beetles *Tribolium* spp.	1.7	4.1	3.9	6.4	2.4	2.0	0	0	33.3	33.3
A fungus beetle *Typhaea* *stercorea*	1.7	0	0	0	0	0.4	0	0	0	0
% Bins with Live & Dead Insects Live Insects	41.1 7.1		43.3 32.0		38.9 18.8		55.0 33.0		100 66.6	
% Bins with Rodent Contamination	54.0		9.4		8.6		11.0		0	

HAWAIIAN INSECT NOTES

An introduced MARSH FLY (Sciomyza dorsata) was approved for release and the first liberation was made at Heeia, Oahu, on December 8, 1960. The original stock of this snail predator was collected by Dr. C. Berg and Lloyd Knutsen in Denmark. Host range tests on the native snail, Achatinella stewartii var. producta, and the introduced carnivorous snails, Gonaxis kibweziensis, G. quadrilateralis and Euglandina rosea, indicate that this snail predator will not jeopardize these species. An ARMYWORM caused severe damage to lawns on Kuulei Road, Kailua, Oahu, on November 18, 1960. Damage was also observed on some other lawns on Oahu. The species responsible for the damage was probably Spodoptera mauritia acronyctoides. An increase in frond damage by COCONUT LEAF ROLLER (Hedylepta blackburni) was observed at Sunset Beach and at Kualoa, windward Oahu, on November 25, 1960. Up to 50 percent of the fronds were severely damaged. The last heavy depredation by this species occurred between March and July 1959. At this time, up to 100 percent of the fronds was defoliated on many trees. Large shipments of larvae of a CERAMBYCID (Plagiohammus spinipennis) were recently received from Mexico. Liberations were made of adults and larvae on Hawaii and Oahu. This species is a root and stem borer of the noxious weed, latana. (C. J. Davis).

A very heavy infestation of BLACK WIDOW SPIDER (Latrodectus mactans) and a FALSE BLACK WIDOW SPIDER (L. geometricus) occurred at Leeward Estates, a fairly new subdivision at Ewa, Oahu. Both species were numerous under the galvanized-iron termite shields of the buildings. (D. Wilton). L. geometricus is the commonest spider at the Pacific Missile Range (PMR) Satellite Tracking Site, South Point, Hawaii. (C. F. Clagg). An unusual population of L. mactans occurred in a large field being developed by the Oahu Sugar Company on the coral shelf of Waipio Peninsula. Random sampling in the most heavily populated 40-50 acres indicate a density of about one large female per square foot, with many females guarding one or more egg masses. Comparable density had been recorded before at South Point, Hawaii, in 1944, but nothing even approaching it had been observed since 1945, when an egg parasite (Eurytoma latrodecti) first appeared in the State. Neither adults or egg masses of L. geometricus were found and around 90 percent of the egg masses of L. mactans were parasitized by E. latrodecti. (F. A. Bianchi).

Larvae of an OEDEMERID BEETLE were collected from a rotting coconut log at West Loch, Pearl Harbor, early in December by William Smythe. This appears to be the first record of collecting of oedemerid larvae in Hawaii. Of the two species of this family (Sessinia livida and Ananca bicolor) known to occur in Hawaii, the latter frequently appears in large numbers in light trap collections. (J. W. Beardsley).

RHODES-GRASS SCALE (Antonina graminis) heavily infested about 2 acres of new lawn, mostly Bermuda grass, locally at Iroquois Point, Oahu. A light infestation was scattered over many more acres. Where infestation was heavy, many honey bees were attracted to the honeydew secreted by the scales. (C. F. Clagg).

Females of a TICK (Ixodes pacificus) were taken from a dog in quarantine; this is the first record of this species in Hawaii. (C. R. Joyce).

A dead specimen of a BILLBUG (Sphenophorus venatus vestitus) was found by J. S. Rosa on December 6, 1960, on the hood of an automobile parked in front of the HSPA Experiment Station, Oahu. Circumstances indicate that the beetle had flown to the car. It is now believed that the species has become established and has spread since it was first reported at Hickham Field a few months ago. (F. A. Bianchi). (Hawaiian Entomological Society, December 12, 1960, meeting).

COOPERATIVE SURVEY ENTOMOLOGISTS

Alabama	Walter H. Grimes, Entomology Department, Auburn University, Auburn
Arizona	Leon Moore, Room 408 - State Office Bldg., 17th Avenue and West Adams. Mail - P. O. Box 6189, Phoenix
Arkansas	W. P. Boyer, College of Agriculture, University of Arkansas, Fayetteville
California	Ronald M. Hawthorne Department of Agriculture 1220 N Street Sacramento 14
Colorado	Leonard E. Jenkins, Department of Entomology, Colorado State University, Fort Collins
Delaware	Paul P. Burbutis, Department of Entomology, University of Delaware, Newark
Florida	Robert E. Woodruff, State Plant Board, Gainesville
Georgia	W. C. Johnson, Extension Service, University of Georgia, College of Agriculture, Athens
Illinois	Clarence E. White, Illinois Agricultural Extension Service, 280 Natural Resources Building, Urbana
Kansas	Leroy L. Peters, Department of Entomology, Kansas State University, Manhattan
Louisiana	William T. Spink, Department of Entomology, Louisiana State University Baton Rouge 3
Maryland	Wallace C. Harding, Jr., Department of Entomology, University of Maryland, College Park
Minnesota	Robert Flaskerd, Department of Agriculture, Division of Plant Industry, University Farm, 301 Coffey Hall, St. Paul 1
Missouri	Ralph E. Munson, Department of Entomology, University of Missouri, 106 Whitten Hall, Columbia
Nebraska	Paul W. Bergman, Extension Service, Agricultural College, Lincoln 3
Nevada	Robert C. Bechtel Department of Agriculture, P. O. Box 1209, Reno
North Carolina	Maurice H. Farrier Department of Entomology, Box 5215, State College Station, Raleigh
North Dakota	Vance V. Goodfellow, Office of State Entomologist, State College Station, Fargo
Oklahoma	H. W. VanCleave, Department of Entomology, Oklahoma State University, Stillwater
Oregon	Joe Capizzi, Division of Plant Industry, Agricultural Building, Salem
Rhode Island	Harry L. Hansen, Department of Plant Pathology-Entomology, University of Rhode Island, Kingston
South Dakota	Gale Mast, Entomology-Zoology Department, South Dakota State College, College Station
Texas	W. H. Newton, Department of Entomology, Texas A & M College, College Station
Virginia	W. A. Tarpley, Virginia Polytechnic Institute, Blacksburg
West Virginia	William H. Gillespie 350 Brooks Hall, West Virginia University, Morgantown
Wisconsin	Philip W. Smith, Plant Industry Division, Wisconsin Department of Agriculture, 448 West Washington Ave., Madison 3
Wyoming	Dale G. Fullerton Plant Science Division University of Wyoming Box 3354, University Station, Laramie

Revised January 2, 1961

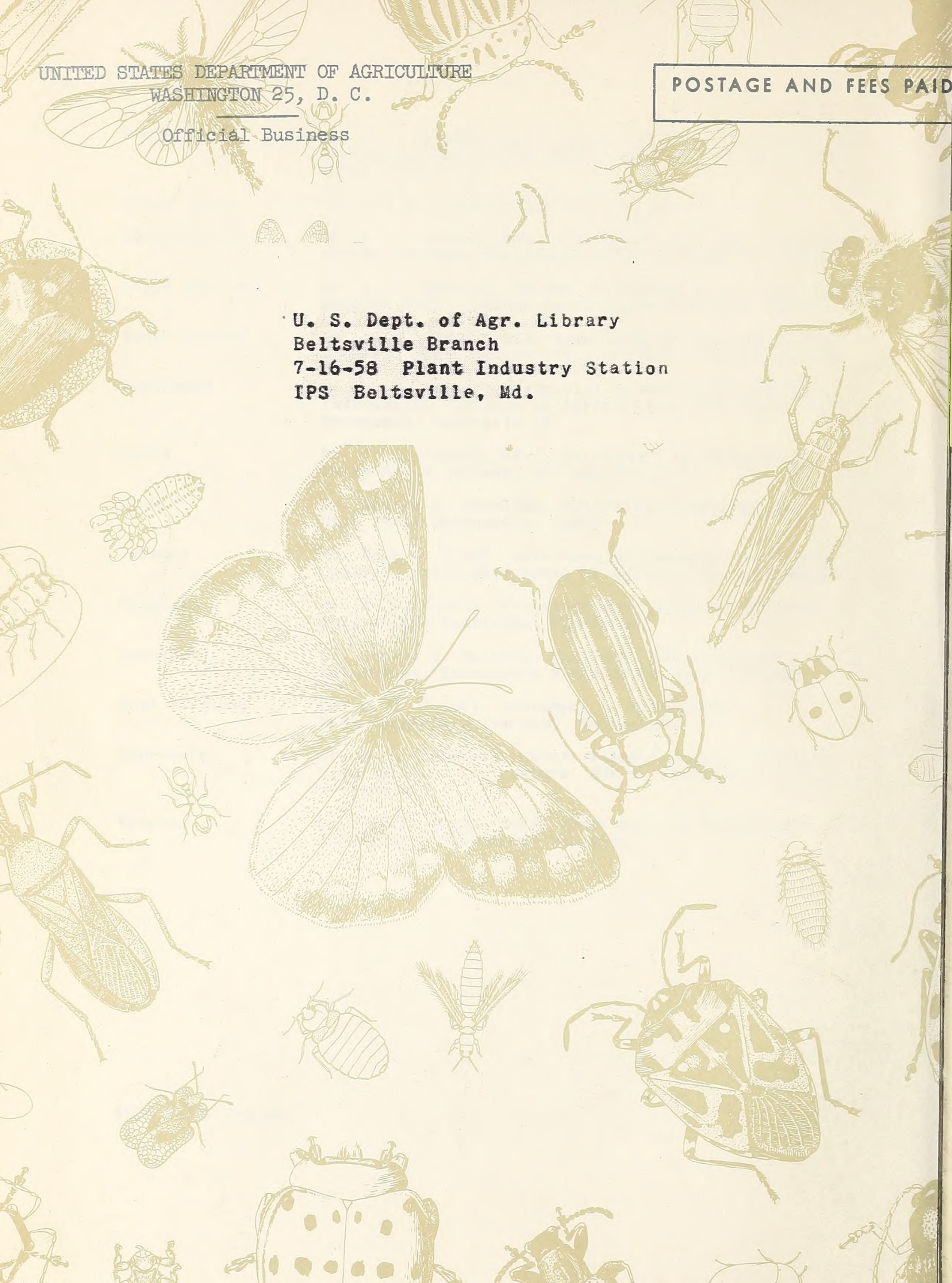
STATE CLEARING OFFICES

For Economic Insect Survey Reports

Alabama	Dr. F. S. Arant, Head, Department of Zoology and Entomology, Auburn University, Auburn
Alaska	Dr. Richard H. Washburn, Entomology Department, Agricultural Experiment Station, Palmer
Arizona	Dr. J. N. Roney, Extension Entomologist, University of Arizona, 1201 W. Madison St., P. O. Box 751, Phoenix
Arkansas	Mr. Gordon Barnes, Extension Entomologist, University of Arkansas, Fayetteville
California	Mr. R. W. Harper, Chief, Bureau of Entomology, State Department of Agriculture, Sacramento 14
Colorado	Dr. Leslie B. Daniels, Head, Department of Entomology, Colorado State University, Ft. Collins
Connecticut	Mr. J. Peter Johnson, Associate Entomologist, Agricultural Experiment Station, P. O. Box 1106, New Haven 4
Delaware	Dr. Dale F. Bray, Chairman, Department of Entomology, University of Delaware, Newark
Florida	Dr. W. G. Cowperthwaite, Plant Commissioner, State Plant Board of Florida, Gainesville
Georgia	Dr. C. R. Jordan, Jr., Extension Entomologist, University of Georgia, College of Agriculture, Athens
Hawaii	Hawaiian Entomological Society, 1527 Keeaumoku St., Honolulu 14
Idaho	Dr. H. C. Manis, Head, Department of Entomology University of Idaho, Moscow
Illinois	Dr. H. B. Petty, Jr., Extension Entomologist, Illinois Agricultural Extension Service, 280 Natural Resources Building, Urbana
Indiana	Dr. John V. Osmun, Head, Department of Entomology, Purdue University, Lafayette
Iowa	Dr. Howard L. Hamilton, Acting Head, Department of Zoology and Entomology, Iowa State University, Ames
Kansas	Dr. Herbert Knutson, Head, Department of Entomology, Kansas State University, Manhattan
Kentucky	Dr. Lee H. Townsend, Head, Department of Entomology, University of Kentucky, Lexington 29
Louisiana	Dr. L. D. Newsom, Head, Entomology Research, Louisiana State University, Baton Rouge 3

Maine	Dr. G. W. Simpson, Head, Department of Entomology, University of Maine, Orono
Maryland	Mr. T. L. Bissell, Department of Entomology, University of Maryland, College Park
Massachusetts	Dr. William D. Tunis, Extension Entomologist, Department of Entomology and Plant Pathology, University of Massachusetts, Amherst
Michigan	Mr. Ray Hutson, Head, Department of Entomology, Michigan State University, East Lansing 13
Minnesota	Dr. D. M. Coe, Director, Division of Plant Industry, Department of Agriculture, Dairy and Food, 312 Coffey Hall, University Farm, St. Paul 1
Mississippi	Dr. R. E. Hutchins, Head, Department of Zoology and Entomology, Mississippi State University, State College
Missouri	Mr. George Thomas, Extension Entomologist, Department of Entomology, University of Missouri, Columbia
Montana	Dr. J. H. Pepper, Head, Department of Zoology and Entomology, Montana State College, Bozeman
Nebraska	Dr. Roscoe E. Hill, Chairman, Department of Entomology, University of Nebraska, Lincoln 3
Nevada	Mr. Lee M. Burge, Director, Division of Plant Industry, Department of Agriculture, P. O. Box 1027, Reno
New Hampshire	Dr. J. G. Conklin, Professor of Economic Entomology, University of New Hampshire, Durham
New Jersey	Dr. B. B. Pepper, Department of Entomology, Rutgers University, New Brunswick
New Mexico	Mr. Dallas Rierson, Director, State Department of Agriculture, New Mexico State University, University Park
New York	Dr. A. A. Muka, Extension Entomologist, Department of Entomology and Limnology, Cornell University, Ithaca
North Carolina	Mr. George D. Jones, Extension Entomologist, North Carolina State College of Agriculture, Raleigh
North Dakota	Dr. J. R. Dogger, Chairman, Department of Entomology, North Dakota State University, State College Station, Fargo
Ohio	Dr. R. P. Holdsworth, Extension Entomologist, Ohio State University, 1735 Neil Ave., Columbus 10
Oklahoma	Dr. D. E. Howell, Head, Department of Entomology, Oklahoma State University, Stillwater
Oregon	Mr. Joseph Capizzi, Survey Entomologist, Division of Plant Industry, State Department of Agriculture, Salem

Pennsylvania	Mr. J. O. Pepper, Extension Entomologist, Zoology and Entomology Department, Pennsylvania State University, University Park
Puerto Rico	Agricultural Experiment Station, Rio Piedras
Rhode Island	Dr. F. L. Howard, Head, Department of Plant Pathology and Entomology, University of Rhode Island, Kingston
South Carolina	Mr. W. C. Nettles, Leader, Extension Entomology and Plant Disease Work, Clemson Agricultural College, Clemson
South Dakota	Dr. G. B. Spawn, Head, Department of Entomology and Zoology, South Dakota State College, College Station
Tennessee	Mr. R. P. Mullett, Extension Entomologist and Plant Pathologist, College of Agriculture, University of Tennessee, Knoxville 16
Texas	Dr. J C. Gaines, Head, Department of Entomology, Texas A & M College, College Station
Utah	Dr. George F. Knowlton, Extension Entomologist, Utah State University, Logan
Vermont	Mr. John W. Scott, Director, Division of Plant Pest Control, State Department of Agriculture, Montpelier
Virginia	Dr. J. O. Rowell, Extension Entomologist, Virginia Polytechnic Institute, Blacksburg
Washington	Dr. Horace S. Telford, Chairman, Department of Entomology, Washington State University, Pullman
West Virginia	Dr. C. K. Dorsey, Professor of Entomology, West Virginia University, Morgantown
Wisconsin	Mr. E. L. Chambers, Chief, Plant Industry Division, Department of Agriculture, 448 W. Washington Ave., Madison 3
Wyoming	Dr. Robert Pfadt, Head, Department of Entomology, University of Wyoming, Laramie



UNITED STATES DEPARTMENT OF AGRICULTURE
WASHINGTON 25, D. C.

Official Business

POSTAGE AND FEES PAID

U. S. Dept. of Agr. Library
Beltsville Branch
7-16-58 Plant Industry Station
IPS Beltsville, Md.